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EXAMINER	
HAJNIK, DANIEL F	

ART UNIT	PAPER NUMBER
2671	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/626,494	DEVARAJAN ET AL.	
	Examiner	Art Unit	
	Daniel F. Hajnik	2671	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-70* is/are pending in the application.

4a) Of the above claim(s) *29-57,64,69 and 70* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28,58-63 and 65-68* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 February 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Claims 29-57, 64, 69, and 70 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to nonelected claims, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 7/25/2005.

Applicants argue that groups I and IV should be group together. The examiner maintains that the groups of the restriction are proper. Group I is drawn to building a three dimensional model classified in 345/420. Group IV is drawn to detecting or analyzing a feature associated with a drawing classified in 382/190. Claims 69 and 70 of group IV have no reference related to building a three dimensional model. Claim 70 refers to a model tree but not building a three dimensional model. Further, claims 69 and 70 would require a separate search because they are classified in different classes.

This restriction is made final.

Drawings

2. The drawings are objected to because:

The first figure in the drawings filed 2/3/2004 does not contain a figure label i.e. 'Figure 1a" and does not contain reference numbers.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure

number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claim 62 is objected to because of the following informalities: The term "the original two-dimensional drawing views" lacks antecedent basis. Appropriate correction is required.

4. Claim 68 is objected to because of the following informalities: The term "the data" lacks antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rappoport (US Patent 6614430, herein referred to as "Rappoport").

As per claim 1, Rappoport teaches the claimed "defining" step under the item labeled 'Detailed Geometry' in table 1 (located at below col 16).

Rappoport teaches the claimed "storing" step in col 8, lines 24-26.

Rappoport teaches of building a feature in col 14, lines 20-25. For example, Rappoport states "one embodiment of the invention can store for a 'round' feature the surfaces generated by the feature" (col 14, lines 20-21) and states "when creating the round feature in a target system" (col 14, lines 24-25). Given the stated functionality of Rappoport, one would be required to build a feature in order to achieve the stated functionality such as to store it and to generate it in a desired target system. Rappoport does not directly teach of building features based on a feature class. However, Rappoport teaches of a feature class containing features (see table 1 under the item labeled 'Feature'). Rappoport teaches of a feature class having feature geometry, feature constraints, and feature dimensions by teaching of a '2-D sketch' (see associated item in table 1) where the 2-D sketch can be contained within and based upon a 'Feature' class. Lastly, Rappoport teaches storing a 'round feature' in an object (col 14, lines 20-24) where an object may suggest a structure or class. Given these teachings, it would have been obvious to one of ordinary skill in the art at the time of invention to build the claimed features based on a feature class. Rappoport teaches one advantage to building features based on a feature class in order to achieve better

organization and teaches of grouping of the features with each other to achieve structure (see table, item labeled 'Feature Structure'). Further, the Rappoport teaches another advantage by teaching of the ability to associate parameters with features based upon classes in order to construct user-defined features (see table 1, item labeled 'User defined features') where these parameters are part of the class.

As per claims 2-4, Rappoport teaches the claimed limitations by stating "During extraction execution (step 130), a bitmap image of the specification is scanned for the presence of arrows. When an arrow is found, a 3D graphical 'selection' operation is executed on the model to find the associated entity" (col 14, lines 56-59). Rappoport teaches the claimed "ordering" in col 8, lines 52-56. Rappoport teaches the claimed application neutral format by teaching of storing data classes capable of a neutral format into a neutral file format (col 8, lines 33-34). In this limitation, the examiner is considering the capability to store data classes into a neutral file format to be an application neutral format.

As per claim 22, Rappoport teaches the claimed limitations in figure 1B where the Creation Planning step 140, in which the exact order is transmitted (see col 8, lines 43, and lines 49-52), occurs after storing it onto a intermediate format, steps 165 and 170.

As per claim 23, Rappoport teaches the claimed limitations in col 7, lines 30-32.

As per claims 5-6, Rappoport teaches the claimed binary file format in col 8, lines 25-26, the claimed geometry library and feature library in table 1 by teaching of a

Detailed geometry class (geometry library) and feature class (feature library).

As per claim 7, Rappoport teaches the claimed two-dimensional entities, three-dimensional entities, and vectors by teaching of in table 1 Schematic diagrams class and a Cross sections Drawings class (3D and 2D representations) and by teaching of a Detailed Geometry class (vectors). Rappoport does not explicitly teach a class for points. However, given that Rappoport describes storing an (x, y) pair of coordinates (col 7, lines 65-66) and given that Rappoport can store a more complex structures such as a vector in a class, it would have been obvious to one of ordinary skill in the art to perform the claimed limitation. The advantage is greater ability to describe geometric data.

As per claim 8, Rappoport does not explicitly the claimed limitations. However, Rappoport teaches in col 8, line 27, of storing data into an object-oriented database. Further, Rappoport teaches of using the system with C++ language in col 13, line 8. The described limitation is a common and associated operation with an object-oriented based language like C++ that involves function calls and private data members within classes and thus would have been obvious to one of ordinary skill in the art. The advantage to doing so is that it provides an effective and reliable way to communicate and transport data within data structures in an object-oriented language.

As per claim 9, Rappoport teaches the claimed limitations by stating "Derived data that has been explicitly transferred is best labeled as such, to avoid mismatches with derived data created in the target system" (col 9, lines 35-37). Fundamental data can be considered data that is not derived data.

As per claim 10, Rappoport does not explicitly teach the claimed limitations. However, Rappoport states "Derived data is automatically computed by a system for internal or external purposes" (col 9, lines 22-24) and states "In some cases there may be several possible mappings for a data type. A good exchange system should let the user specify policies and priorities between different mapping alternatives" (col 9, lines 40-44). Given that the derived data can be generated automatically and that there is an exchange system for mapping data, it would have been obvious to one of ordinary skill in the art to perform the claimed limitations. The advantage is that one can maintain derived data with up-to-date changes and thus the derived data is more useful because it is has a more accurate representation of the design data and more accurate design of what the user wants to achieve.

As per claim 11, Rappoport teaches the claimed limitations in col 10, lines 8-11.

As per claim 12, Rappoport teaches the claimed limitations in table 1 by teaching of a "sketch plane" under the item titled 'Feature'.

As per claim 13, Rappoport teaches the claimed limitations in table 1 by teaching of a "vector" under the item titled 'Detailed geometry', by teaching of '2-D Sketch' (item in table 1) and by teaching of a "two-dimensional entity containing several types of objects, such as geometric elements" (see table 1, '2-D Sketch item').

As per claim 14, the reasons and rationale for the rejection of claim 8 is incorporated herein. Rappoport does not explicitly the claimed limitations. Given that the system can use an objected oriented language it would have been obvious to one of ordinary skill in the art to perform the claimed limitation. One advantage to inheriting is

better ability to recycle code and reuse it for later projects and designs.

As per claims 15 and 16, Rappoport teaches the claimed limitations in col 6, lines 19-26 and 31-34 which teaches of evaluating the target systems' capabilities to see whether all inherent operations are support (thus are common) by a data type and determining whether there is full support or partial support for each feature type and taking the appropriate actions with data structure creation.

As per claim 17, Rappoport teaches the claimed limitations by stating "This is useful, for example, when creating the round feature in a target system that does not fully support a round feature, in which case the round feature will be mapped to a lower level of data abstraction, namely geometry. The round's geometry will be created in the target system using surfacing operations or features" (col 14, lines 23-30). In this case, a feature is created by drawing a circle-like shape from surface operations and features (entities on a specific surface).

As per claim 18, Rappoport teaches the claimed limitations by teaching that in table 1 a 'Feature' can have an argument associated with a '2-D Sketch' (see item labeled 'Feature' in table). The item labeled '2-D Sketch' in the table teaches of "constraints".

As per claim 19, Rappoport teaches the claimed limitations by teaching of "A two-dimensional entity containing several types of objects, such as geometric elements, dimensions between the geometric elements, constraints on and between the geometric elements" see table 1, the item labeled '2-D Sketch' where a constraint type (on or between) is used, a constraint data value (dimensions), and a constraint object.

As per claim 20, Rappoport teaches the claimed limitations in col 8, lines 25-26 and col 12, lines 33-35.

As per claim 21, Rappoport teaches the claimed limitations in table 1 in the item labeled 'Simplified views' where this item teaches of containing a plurality of polygons for rendering. The class would have to have some sense of a coordinate system associated with this view in order to properly render the polygons and know where on the screen they are located.

As per claim 24, this claim has limitations that are similar to those contained within claim 22, and thus are subject to the same reasons for rejection.

As per claim 25, this claim has limitations that are similar to those contained within claim 23, and thus are subject to the same reasons for rejection.

As per claim 26, Rappoport teaches the claimed limitations in col 8, lines 25-26 and 10-12.

As per claim 27, Rappoport does not explicitly teach the claimed limitations. However, Rappoport teaches that CAD systems are often used in collaborative environments (col 1, lines 25-28). The advantage to doing so is that it can be useful for collaboration between different company departments and between more than one company (col 1, lines 26-28). This would also save the collaboration members time in traveling because more work could be accomplished together through a shared system.

As per claim 28, Rappoport teaches the claimed limitations in col 8, lines 25-26 and col 12, lines 35-37.

7. Claims 58-63, and 65-68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hazama et al. (US Patent 6212441, herein referred to as "Hazama") in view of Rappoport.

As per claim 58, Hazama teaches the claimed detecting step by teaching of detecting features in 2-D drawings in col 57, line 54 and col 51, lines 56-59. Hazama teaches the claimed correcting errors step in figure 13, step 162. Hazama teaches the claimed receiving step in col 52, lines 58-60 where the corrected drawings are received back from the server after automatic detection.

Hazama teaches the claimed "profile analysis" and the claimed "feature analysis" in figure 14A, steps 190 and 192 where the system detects boundaries (profile analysis) and detects shapes (feature analysis).

Hazama does not teach the claimed producing a list step. However, it would have been obvious to one of ordinary skill in the art to perform the given limitation. One advantage to doing so is that a list is one of simplest and easiest structures to implement in computer memory for keeping track of a plurality of items. Hamaza teaches of analyzing features and thus would have good reason to remember them in memory at a later time using a structure to organize them such as a list.

Hazama does not teach the claimed writing step. Rappoport teaches the claimed limitation by teaching of storing in a binary file format (col 8, lines 25-26). It would have been obvious to one of ordinary skill in the art at the time of invention to combine Hazama and Rappoport. Rappoport teaches one advantage of saving this information by teaching of properly keeping track of the order of items and features so that they may

be properly reconstructed into a model at a later time (col 8, lines 31-33, and 40-42).

As per claim 59, Hazama does not teach the claimed limitations. Rappoport teaches these limitations in col 8, lines 24-26.

As per claim 60, Hazama does not teach the claimed limitations. Rappoport teaches these limitations in table under the item labeled 'Feature' where it teaches of each feature possessing parameters. One advantage is that the parameters offer the ability to reduce numerical inaccuracies between conversions (col 8, lines 59-63).

As per claim 61, Hazama teaches the claimed back projecting step in col 57, lines 54-56 by stating "each of the views projected in order to develop a 3-D model".

As per claim 62, Hazama does not teach the claimed limitations. However, Hazama teaches in figure 22 of simultaneously producing two-dimensional model drawing views and a projection view from the 3-D dimensional model (see top right drawing view in figure). Given these capabilities, it would have been obvious to one of ordinary skill in the art at the time of invention to perform the claimed limitations. One advantage to the overlaying step would be to save screen space in the workspace and to show spatial relationships between the views.

As per claim 63, Hazama teaches the claimed "comparing" in col 53, lines 60-62.

As per claim 65, the reasons and rationale for the rejection of claim 58 are incorporated herein. Hazama teaches the claimed filtering in col 52, lines 53-58 by teaching of detecting and eliminating text (non-graphical) features for the 2-D drawings.

Hazama teaches the claimed splitting step in figure 14E (also see col 53, lines 46-48).

Hazama does not teach the claimed "exploding blocks". Rappoport teaches this limitation in table 1 under the item labeled 'Cross Sections Drawings' where the reference teaches of 'exploded views of an assembly' where an assembly can be made up of blocks or parts. It would have been obvious to one of ordinary skill in the art at the time of invention to combine Hazama and Rappoport. Rappoport teaches one advantage of the exploded view is to see a cross section created by intersecting a 3-D part or assembly with a plane (table 1 under the item labeled 'Cross Sections Drawings').

As per claims 66-67, Hazama does not teach the claimed limitations. However, it would have been obvious to one of ordinary skill in the art to fix each view to a common origin and translate each entity to a common origin. Hazama teaches one advantage to possibly performing this limitation by teaching of comparing the views to each other (col 53, lines 60-62) and that all dimensions are scaled in each view properly to each other (col 54, lines 65-67). These comparison operations would benefit from the mathematical simplicity of setting each view and entity based upon a common origin.

As per claim 68, Hazama teaches storing (writing) data into classes (col 60, lines 33-36).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Thackston (US Patent 6295513).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel F. Hajnik whose telephone number is (571) 272-7642. The examiner can normally be reached on Mon-Fri (8:30A-5:00P).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka J. Chauhan can be reached on (571) 272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Daniel Hajnik 11/14/05

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ULKA J. CHAUHAN
PRIMARY EXAMINER